

**POPULAR
ELECTRONICS**

Builds a

Wireless Broadcaster-Amplifier

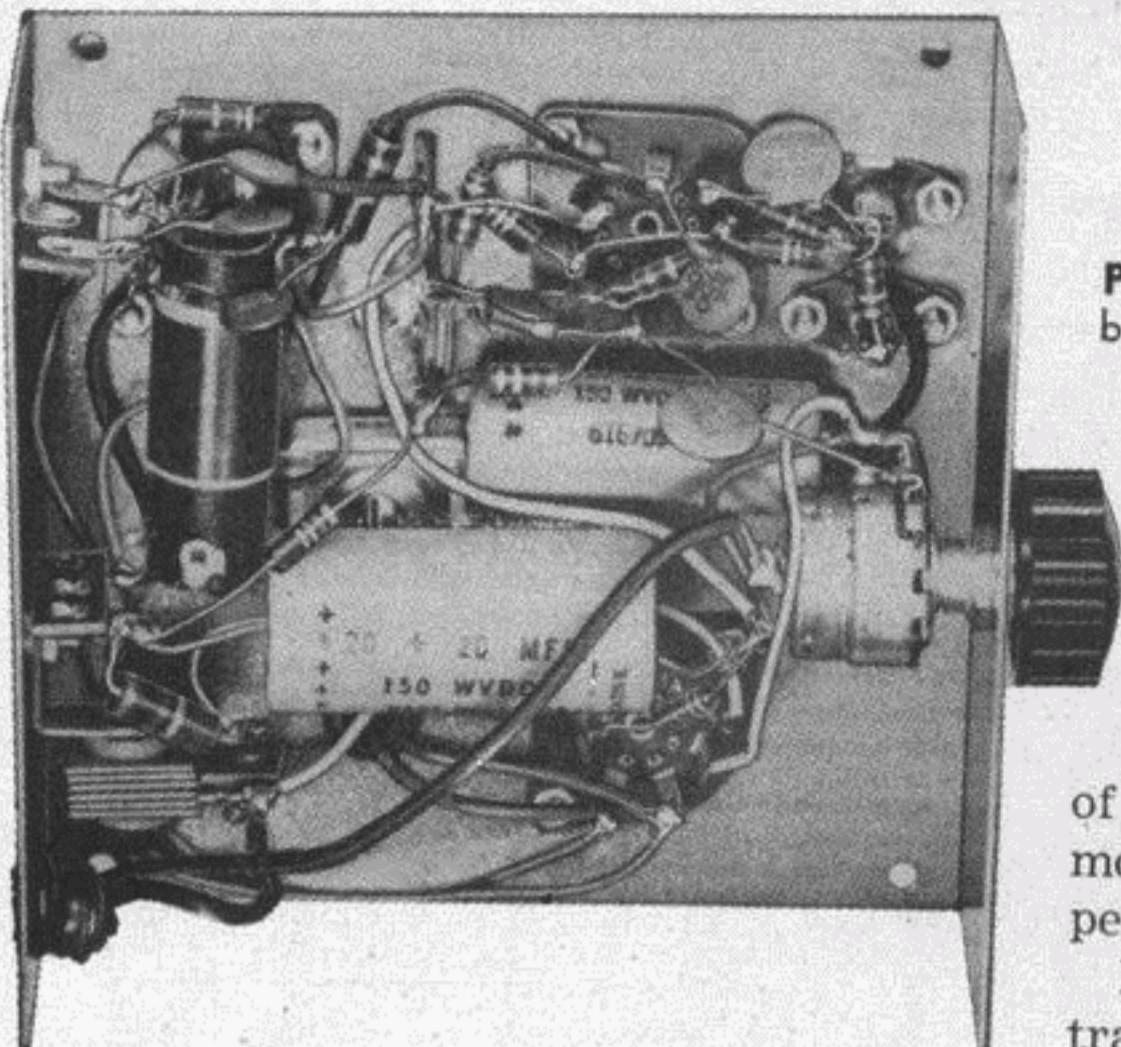
THE Knight Wireless Broadcaster-Amplifier (Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill.), takes only a few hours to build, and has many home entertainment uses. It can be connected to a record player or microphone to send programs out to any number of standard radios in the house. Or it can be used as a complete preamplifier and amplifier with any phono cartridge. One input takes ceramic or crystal cartridges and microphones; the other takes magnetic cartridges and microphones.

Mounting of the major parts of the unit is the first assembly step. There is

Flexible Knight-Kit transmits

music throughout the home

a good reason for this because all the parts mounted on the underside of the chassis have terminals that are used for point-to-point wiring. Sockets, input jacks, volume control and switch, selenium rectifier and terminal strips are involved here. Parts with wire leads are supported by those leads after they are soldered into the cir-



Precut color-coded wire supplied with the broadcaster-amplifier kit reduces wiring time.

cuit. There are 72 steps in all to be followed in completing the broadcaster-amplifier.

How It Operates. The phono amplifier section consists of two tubes; a 12AX7, and a 50C5. This circuit amplifies the input signals from the phono cartridge or microphone, making the signals strong enough to drive a speaker. Output is slightly more than 1 watt.

Ceramic, crystal or magnetic cartridges are correctly loaded by input resistors. The 12AX7 preamplifier tube supplies the high gain needed for magnetic cartridges, with equalization supplied by a feedback loop made up of R-6 and C-4 in the circuit.

Output from the preamplifier stage is fed into the 50C5 audio output tube which supplies ample power to drive a 3.2-16 ohm speaker. The output level is adjusted by a volume control at the grid of the output tube.

As a wireless broadcaster, this unit operates much like a regular broadcasting station. It sends out a modulated carrier signal between 600 and 1500 kc. which can be received by any standard radio within its range.

The carrier wave is produced by the 50C5 oscillator tube, and can be varied between 600 and 1500 kc. by adjusting a trimmer capacitor whose screw projects through the top of the chassis. The audio 50C5 doubles as an audio output and modulator tube, and amplifies the audio voltage to effect 75% modulation of the carrier wave.

Clean modulation is assured by the use

of degenerative feedback. The amount of modulation can be varied by adjusting the percentage control.

Remember that the wireless broadcaster transmits a signal over the air and hence must meet FCC requirements to be operated without a license. If it is built according to the instruction manual, with not more than 10 feet of antenna connected, there will be no problems. The FCC requires that the certification listed on page 15 of the Allied instruction book be attached to the unit. Cut it out of the manual and paste it on the bottom cover.

Modifications. For more advanced experimenters, or beginners who have conquered the fundamentals, the Allied broadcaster circuits can be modified very simply to form other pieces of equipment. For example, you can change the oscillator circuits to cover a very low frequency to make a wired-wireless or carrier-current transmitter that will radiate over the local power lines to a considerable distance.

An audio signal tracer is another piece of equipment that can be made from the unit. Almost no modification is needed, but an isolation transformer should be added, since you may use it to test audio amplifiers or receivers that have an a.c./d.c. circuit. Only the 12AX7 and one of the 50C5 tubes are employed for signal tracing. The r.f. oscillator 50C5 is not needed but its filament is required in the circuit. A switch can be added to open the cathode circuit to make the oscillator inoperative.

All under-the-chassis wiring is completely enclosed and rubber feet are supplied so that the unit can sit on top of any piece of furniture. A.C. leakage from chassis to ground is said to be well within Underwriters Laboratories specifications. The finished unit can be proudly displayed, or—if concealed location is preferred—it's small enough to fit almost anywhere.